

22318

11819

3 Hours / 70 Marks

Seat No.

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- Instructions :**
- (1) All Questions are *compulsory*.
 - (2) Illustrate your answers with neat sketches wherever necessary.
 - (3) Figures to the right indicate full marks.
 - (4) Assume suitable data, if necessary.

Marks

1. Attempt any FIVE of the following :

10

- (a) Define :
 - (i) Pixel
 - (ii) Frame Buffer
- (b) Give the characteristics of display adaptor.
- (c) Explain Raster Scan.
- (d) State two line drawing algorithms.
- (e) List types of Polygon.
- (f) List various polygon filling algorithms.
- (g) Give matrix representation for 2D scaling.

2. Attempt any THREE of the following :

12

- (a) Differentiate between Random Scan and Raster Scan.
- (b) Explain and write steps for DDA line drawing algorithm.
- (c) List out basic transformations techniques. Explain scaling transformation with respect to 2D.
- (d) Explain differ types of Text clipping in brief.

- 3. Attempt any THREE of the following :** **12**
- (a) Explain stroke method and Bitmap method with example.
 - (b) Explain types of Parallel Projection with example.
 - (c) Write down Cohen-Sutherland Line clipping algorithm.
 - (d) Explain Koch curve with diagram.
- 4. Attempt any THREE of the following :** **12**
- (a) Compare Bitmap Graphics and Vector based graphics.
 - (b) Consider line from (4, 4) to (12, 9). Use Bresenham's algorithm to rasterize this line.
 - (c) Use Cohen-Sutherland algorithm to clip two lines P1 (40, 15) – P2 (75, 45) and P3(70, 20) – P4(100, 10) against a window A(50, 10), B(80, 10), C(80, 40) & D(50, 40)
 - (d) Consider the square A(1, 0), B(0, 0), C(0, 1), D(1, 1). Rotate the square ABCD by 45° anticlockwise about point A(1, 0).
 - (e) Explain curve generation using Interpolation technique.
- 5. Attempt any TWO of the following :** **12**
- (a) Rotate a triangle defined by A(0, 0), B(6, 0) & C(3, 3) by 90° about origin in anti-clockwise direction.
 - (b) Explain boundary fill algorithm with pseudo-code. Also mention its limitations, if any.
 - (c) Obtain the curve parameters for drawing a smooth Bezier curve for the following points A(0, 10), B(10, 50), C(70, 40) & D(70, -20).
- 6. Attempt any TWO of the following :** **12**
- (a) Write matrices in homogeneous co-ordinate system for 3D scaling transformation.
 - (b) Write down Cyrus-Beck line clipping algorithm.
 - (c) Derive the expression for decision parameter used in Bresenham's circle drawing algorithm.
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